REMARKS

The following remarks are in response to the Office Action of February 2, 2004. The Office Action rejected all of the pending claims (claims 2, 3, 11, and 47-67). Claims 50 and 65 were rejected under 35 U.S.C. 112, first paragraph. Claims 11 and 53 were rejected under 35 U.S.C. 102(b) as anticipated by Knibbeler, U.S. patent number 4,888,809, with claims 54-59 rejected under 35 U.S.C. 103(a) as being unpatentable over Knibbeler in view of additional references. Claims 2, 3, 47-49, 51-52, 60-64, 66, and 67 were rejected under 35 U.S.C. 103(a) as being upatentable over Olson, U.S. patent number 3,104,729, in view of Plunkett, U.S. patent number 5,386,478, (with additional references cited for claims 47, 48, 62, and 63). As discussed further below, although these rejections are believed to be in error, a number of the claims have been amended to further distinguish them from the prior art, to clarify their language, or both. Additionally, several new claims have been added.

Interview

The Applicants thank the Examiner for telephone interview of April 8, 2004, at which they were represented by the undersigned and by Gerald P. Parsons of the same firm. In the interview, the discussion was on the distinctions at a fundamental level between the cited prior art and the application (focusing on claim 3), as is discussed below. Briefly, the prior art (such as Plunkett) depends on a feedback loop based on the sound received at a specific listening location or locations, whereas the aspects of the present invention to which the pending claims are drawn is about the relative physical relationship of the speakers to one another in and of themselves. Although the Applicants believe that this difference is reflected in the claims, it was agreed that the claims may benefit from some revision to make this distinction more explicit. The Finality of the present Office Action, and that it is believed to be improper, were also briefly discussed.

Finality of Office Action

According to section 706.07(a) of the M.P.E.P., beginning on the first line of the second paragraph, "second or any subsequent actions on the merits shall be final, *except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims* nor based on information submitted in an information disclosure statement ..."[emphasis added]. As noted in the Response to Arguments portion at the top of page 2 of the Office Action, as well in the detailed rejections of the pending claims,

new grounds of rejection have been given for all of the pending claims, including claim 3. In its Conclusion, the Office Action states "Applicant's amendment necessitated the new ground(s) or rejection ..." (form Paragraph 7.40). It is respectfully submitted that the Applicant did not amend all of the claims thereby necessitating a new grounds of rejection and that the finality of the Office Action is premature.

More specifically, claim 3 is an original claim, having originally been a dependent claim that was only re-presented in independent form, and which has not been amended to add or remove any limitations. Consequently, it is subject to a "new ground of rejection that is [not] necessitated by applicant's amendment of the claims" and the declaration of finality is contrary to section 706.07(a) of the M.P.E.P.. (Additionally, the cited new grounds are not the result of an information disclosure statement as described in the M.P.E.P..)

Therefore, the Office Action has rejected an original claim on new grounds and, improperly, made the rejections final. Consequently, it is respectfully submitted that the finality of the Office Action is premature and should be withdrawn.

Differences between prior art and present invention

The Office Action rejected independent claims 3 and 60 based on Olson in view of Plunkett, where Olson presents a loudspeaker system and Plunkett is cited for the limitations related to providing parameters of the physical relational characteristics of the speakers and using these parameters to modify the input of the speakers. Although Plunkett does describe adjusting the input signals to the speakers, this is done based on an analysis of the sound signal picked up by a microphone at a specific point. The speaker inputs are then adjusted to optimize the sound at that listening location based on the sound *as received at that location.* (The specific device to which the Plunkett patent is directed is a remote control that picks up the sound from the speakers' output at this specific listening location and in response transmits a signal back to the stereo system, where the adjustments to the speaker inputs are adjusted as part of a closed feedback loop.) The sound received at listening location will be a product of the environment in which the speakers are placed and how this environment responds to the speakers output, as well as the particular location and how these effects are perceived at that specific location.

The claims pending in the present application are directed to aspects of the present invention related to modifying the input signals to the speakers based on the relative physical

characteristics of the speakers with respect to one another in and of themselves; that is, properties of the speakers, such as their physical separation within a shared enclosure, that are based on the speakers and their mounting in the enclosure, rather than dependent on the environment in which the speakers and their enclosure are placed and that are not dependent upon the sound received at a particular listening location within this environment. It is parameters of these the relative physical characteristics of the speakers with respect to one another that are used to modify the speaker inputs, a primary example in the application being the physical separation of the speakers as held in a shared enclosure. (A motivation of the present application is that signal processing algorithms typically implicitly assume a particular speaker separation, which may not---and likely will not---coincide with a user's speaker placement, and that the correct speaker separation is more important than listener position within the listening area. This is described briefly at line 29 on page 10 of the application and move extensively in the Background, particularly beginning at page 3, line 25.) Although the signal processing can also take environment and listener position into account, the pending claims specify that at least one of the parameters used by the signal processor to modify the speaker inputs is a parameter of the relative physical relationship of the speakers themselves.

It is respectfully submitted that a failure to appreciate this distinction is reflected in the comments of the Office Action; for example, on page 4 at lines 5-7: "As a listener moves from one location to another, the physical relationship between the speakers changes as their respective distances to the listener changes"; and again on page 4 at lines 19-20: "different listener positions provide different distances between the two speakers." These statements are incorrect: as a listener moves from location to location, the relationship of the *listener* to the speakers changes, but the relationship of the speakers *to one another* does not change. Similarly, different listener positions provide different distances between the *listener* and the speakers, but this does not change the distance between the speakers themselves.

Further, it is believed that it is not obvious to combine the teachings of Plunkett with those of Olson; rather, it is respectfully submitted that these two references teach away from one another. As already noted, Plunkett is very specifically directed at optimizing the sound quality at a particular *point* or listening location; this is explicit from the first sentence of the Abstract ("closed loop adjustment ... optimizes the sound quality at a particular location as sensed there"), through the entire specification, and in all of the independent claims. In contrast, Olson is directed to providing "sound reproduction in substantially uniform auditory

perspective *over an extended and relatively wide area* frontally thereof", as described at column 2, lines 10-12, where the emphasis has been added.

The Office Acton rejected independent claim 11 based on Knibbeler, which adjusts the front to rear balance, or fade, between the front transducers and the rear transducers and then adjusts the equalization, all in response to the acoustic signals at two specific locations. Knibbeler is similar to Plunkett in that what is used is the *acoustic signal* at, in this case, two listening positions, which is again a function of the acoustic environment in which the speaker assemblies are placed. This again differs from the aspects of the present invention found in the pending claims, where the speaker inputs are modified according to physical relational parameters of the speakers themselves as mounted in the enclosures, which is not a function of a particular listening position.

Newly added claims

New claims 68-85 have been added. These claims are drawn to the same aspects of the present invention as others of the currently pending claims. Claims 68-80 are method claims. These claims contain the limitation that the input signals are modified based on at least one parameter of the physical relational characteristics of the speakers themselves with respect to one another as mounted in the shared enclosure. As noted above, this is contrary to the teachings of both Plunkett and Knibbeler, where the initial audio signals are instead modified on the acoustic signal at the listening position.

Additionally, claim 68 further contains the limitation that "at least one of said parameters ... is *predetermined*", where the italics are added. Both Plunkett and Knibbeler *adjust* parameters based on the response at the listening positions. In contrast, for the present invention, as the physical relational characteristics of the speakers are with respect to one another *as mounted in the enclosure*, this information can be used, according to this embodiment of the present invention, to pre-set one or more of the parameters to a predetermined value. In one example, values could be set at the factory: "In this way, an algorithm with parameters for this specific configuration may be incorporated into a circuit for use with a specified speaker configuration, thereby allowing these enhancement parameters to be factory set." (p.14, lns. 8-11) This aspect is also contrary to the teachings of both Plunkett and Knibbeler, which require parameters to be adjusted in response to a recieved acoustic signal.

More specifically, newly added independent claim 68 contains the limitation

> modifying said initial audio signals in said one or more signal processors based on one or more parameters of the physical relational characteristics of said speakers *with respect to one another as mounted in the shared enclosure* to produce said plurality of audio input signals, *wherein at least one of said parameters of the physical relational characteristics of said speakers with respect to one another as mounted in the shared enclosure is predetermined;*

where the emphasis is again added.

Several other independent method claims have also been added. These add to the limitations of claim 68, but are written in independent form. Claim 76 specifies that the first speaker array is for use in the front of the listening array and adds an additional array of speakers in a second enclosure to the rear of the listening area, similar to the arrangement of claim 11, where the signal supplied to the rear speakers is modified by at least one parameter of the physical relational characteristics of the rear speaker array that is independent of listening position in the listening area.

Claim 77 also extends the methods of claims 68 by specifying a plurality of arrays for placement around the periphery of the listening area. Dependent claim 78 adds the further step of deploying the arrays, while dependent claim 79 specifies a front and rear location for two of the arrays with respect to the listening area and claim 80 adds additional speakers to the sides of the listening area.

Several new device claims have also been added. These are similar to the newly added independent method claims and are, consequently, drawn to the same aspect of the present invention as the other previously pending claims. More specifically, newly added device claims 81-85 respectively correspond to method claims 68, 76, 77, 79, and 80 and are all believed to be similarly allowable.

Several other dependent claims have also been added. Newly added dependent claims 69-75 are similar to the previously pending depending claims, but are dependent on claim 68.

As these claims all contain limitations not found in the prior art, and which are contrary to the cited references, newly added claims 68-85 are believed allowable over the prior art.

Previously Pending Claims

Although believed allowable in the previous form, independent claims 3, 11, and 60 have all been amended to more clearly delineate their distinctions from the prior art.

More specifically, the Office Action rejected independent claims 3 and 60 under 35 U.S.C. 103(a) based on Olson in view of Plunkett. As discussed above, Plunkett is very specific on that the speaker inputs are modified based on the sound *as received at a specific listening position* and, as such, teaches away from Olson. It is also contrary to the present invention as described in claim 3. Claim 3, as now amended, contains the limitations:

> providing one or more parameters of the physical relational characteristics of said speakers with respect to one another in said enclosure; and

where the underlined portions have been added by the current Amendment. For the reasons described above, it is respectfully submitted that claim 3 is allowable over the prior art for at least these limitations. Claim 3 has also been amended to move the limitation "wherein said two or more speakers are in the same enclosure" into the preamble.

Similarly, claim 60 now reads

> providing one or more parameters of the relational characteristics of said speakers with respect to one another as determined by the mounting of the speakers in the enclosure

where the underlined portions have again been added by the current Amendment. As with claim 3, it is believed that the language "of the relational characteristics of said speakers" makes it clear that the parameter or parameters are a property of the speakers themselves and how they are mounted in their enclosure. This is distinct from the prior art, which is based on an acoustic signal at a specific listening position and not on the physical relational characteristics themselves. Consequently, it is respectfully submitted that claim 60 is allowable over the prior art for at least these limitations.

The Office Action rejected claim 11 under 35 U.S.C. 102(b) as anticipated by Knibbeler. Claim 11, amended as marked, contains the language

> wherein said audio input signals are derived based on fixed input parameters ~~determined by~~ of predetermined speaker relational characteristics of said speakers with respect to one another.

As with Plunkett, Knibbeler adjusts the speaker inputs based upon the acoustic signal at the listening positions, not based on input parameters of predetermined speaker relational characteristics. Consequently, as discussed above, claim 11 is believed allowable over the prior art.

Also, note that in claim 11 it is the "speaker relational characteristics of said speakers with respect to one another" which are predetermined, not just their positions, and that the "audio signals are derived based on *fixed* input parameters of" these characteristics, where the emphasis is added; that is, the input parameters are *fixed* and they are parameters of

predetermined characteristics. In Knibbeler, the speaker positions are predetermined, but there is no indication of either the relational characteristics having been predetermined nor, more importantly, of the parameters being fixed; rather, instead of the parameters being fixed, Knibbeler teachings are directed at *adjusting the parameters in response to the audio signals as picked up at points P_1 and P_2.* This is also contrary to the present invention.

For any of these reasons, the rejection of claim 11 under 35 U.S.C. 102(b) as anticipated by Knibbeler is respectfully submitted to be in error.

(Claim 11 has also been amended to remove the use of the word "fixed" to modify the "speakers mounted in a predetermined position". It is believed that this change also helps to clarify the language of the claim.)

Many of the previously pending dependent claims are believed to be further allowable for a number of reasons, many of which are presented in the previous Amendment. However, to limit the length of the present Amendment and save space, these will not be discussed further at this time.

Dependent claims 50 and 65 were rejected under 35 U.S.C. 112, first paragraph, due to the language "the relative compliance of the enclosure." Both of these claims have now been amended as "the relative compliance of the portions of the enclosure in which said two or more speakers are mounted" to clarify their meaning and thereby conform to the comments of the Office Action.

Conclusion

It is respectfully requested that the finality of the pending Office Action be reversed and the present Amendment be entered. For any of the reasons given above, it is respectfully submitted that the rejections of the current Office Action are in error. Reconsideration of claims 2, 3, 11 and 47-67, and consideration of new claims 68-85, and an early indication of their allowance are earnestly solicited.

Respectfully submitted,

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